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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* ARVIN TECHNOLOGIES, INC.

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Appeal 2009-003657  
Application 10/775,033  
Technology Center 3700

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Decided: September 25, 2009

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Before JAMESON LEE, SALLY C. MEDLEY, and  
MICHAEL P. TIERNEY, *Administrative Patent Judges*.

LEE, *Administrative Patent Judge*.

DECISION ON APPEAL

A. STATEMENT OF THE CASE

This is a decision on appeal by the real party in interest, Arvin Technologies, Inc. [ATI], under 35 U.S.C. § 134(a) from a final rejection of claims 1 and 3-25. We have jurisdiction under 35 U.S.C. § 6(b). We reverse.

References Relied on by the Examiner

Rautenstrauch	1,991,173	Feb. 12, 1935
Thauer	3,693,935	Sept. 26, 1972
Kipp et al. [Kipp]	5,630,571	May 20, 1997
Lee	5,631,761	May 20, 1997
Welty et al. [Welty]	6,935,618 B2	Aug. 30, 2005

The Rejections on Appeal

The Examiner rejected claims 1, 3-5, 11, 13, and 16 under 35 U.S.C. § 102(b) as anticipated by Thauer.

The Examiner rejected claims 6, 14, and 15 under 35 U.S.C. § 103(a) as unpatentable over Thauer and Kipp.

The Examiner rejected claims 7-10, 12, 17, and 18 under 35 U.S.C. § 103(a) as unpatentable over Thauer.

The Examiner rejected claims 19-22 under 35 U.S.C. § 103(a) as unpatentable over Thauer, Lee, and Welty.

The Examiner rejected claims 23-25 under 35 U.S.C. § 103(a) as unpatentable over Thauer and Rautenstrauch.

The Invention

The invention relates to valves for exhaust pipes in which a bearing sleeve of the valve is sealed to prevent leakage of exhaust gas through the bearing sleeve. (Spec. ¶¶ 11-15.)

Independent claim 1 is reproduced below (App. Br. 14 Claims App'x):

An exhaust pipe valve, comprising:

a housing;

a bearing sleeve mounted in the housing and having a primary bearing surface;

a valve spindle rotatably mounted in the bearing sleeve and having a primary sealing surface that cooperates with the primary bearing surface of the bearing sleeve;

a valve plate mounted at the valve spindle, wherein the primary bearing surface of the bearing sleeve faces the valve plate;

a washer arranged on the valve spindle, wherein the washer cooperates with the bearing sleeve on a side of the bearing sleeve that faces away from the valve plate, the side of the bearing sleeve that faces away from the valve plate being a secondary bearing surface, and wherein the washer has a secondary sealing surface that cooperates with the secondary bearing surface; and

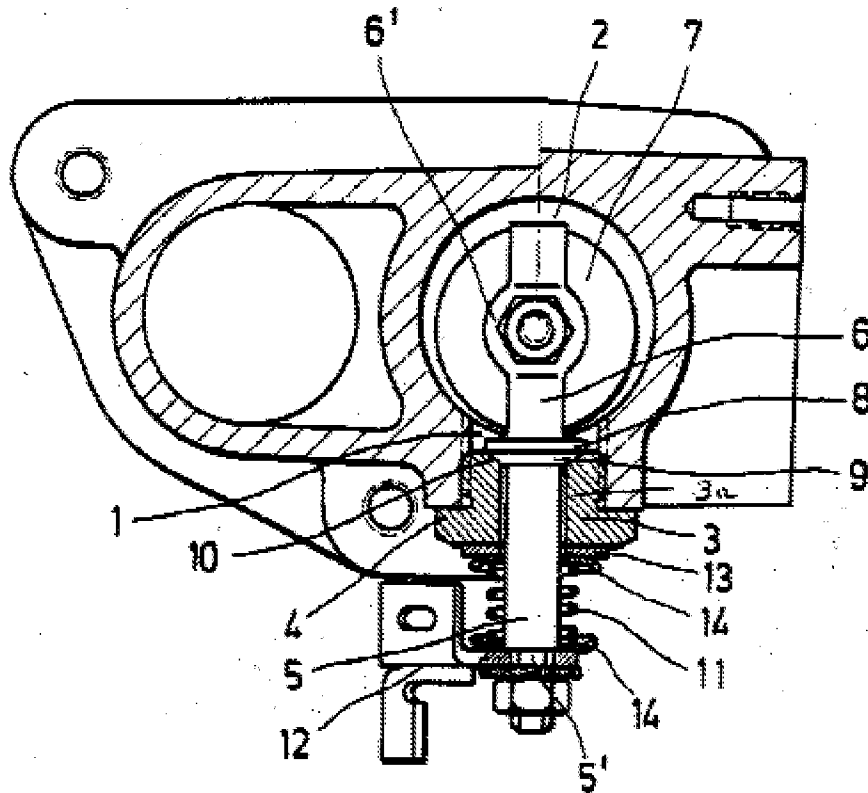
a spring that biases the primary sealing surface of the valve spindle against the primary bearing surface of the bearing sleeve while biasing the washer against the bearing sleeve.

B. ISSUE

Has ATI shown that the Examiner was incorrect in finding that Thauer discloses a washer having a secondary sealing surface that cooperates with a secondary bearing surface of a bearing sleeve?

C. FINDINGS OF FACT

1. Thauer discloses a throttle valve shaft in the exhaust gas pipe of an internal combustion engine. (Thauer 1:4-6.)
2. Thauer's figure is reproduced below:



The figure shows a throttle valve of an engine exhaust pipe.

3. Thauer discloses that insulating disc 13 on valve shaft 5 is interposed between spring 11 and bearing body 3 to shield the spring from heat. (Thauer 2:36-40.)

4. Thauer does not disclose that the connection of insulating disc 13 and bearing body 3 seals any structure.

5. The only sealing disclosed in Thauer is of bearing body 3 as provided by the connection of the collar 8 of valve shaft 5 and the upper conical surface 9 of the bearing body. (*Id.* at 2:24-28.)

6. Thauer describes that there is “substantial clearance” between the valve shaft and the bearing body. (*Id.* at 1:26-29.)

7. Thauer also discloses that it is only the upper seal of bearing body 3 that prevents gases from passing through the “clearance space” between the bearing body and valve shaft 5 and escaping from the bearing body. (*Id.* at 2:43-50.)

#### D. PRINCIPLES OF LAW

Anticipation is established only when a single prior art reference discloses all elements of the claimed invention. *In re Spada*, 911 F.2d 705, 708 (Fed. Cir. 1990).

#### E. ANALYSIS

We address first the anticipation rejection of claims 1, 3-5, 11, 13, and 16 based on Thauer. ATI argues dependent claims 3-5, 11, 13, and 16 collectively with independent claim 1. We focus on the disputed limitations.

ATI contends that Thauer does not disclose a washer with a secondary sealing surface required by claim 1. In particular, ATI argues that Thauer does not disclose a washer that “has a secondary sealing surface that cooperates with the secondary bearing surface” of a bearing sleeve. (App. Br. 3:17-19.)

The Examiner found that the above-quoted limitation was satisfied by the configuration of Thauer's insulating disc 13, termed a washer by the Examiner, and bearing body 3. The Examiner offered a meaning of "seal" as "substantial reduction in flow, even if not a complete elimination of flow." (Ans. 7:1-2.) The Examiner stated that the upper surface of washer 13 forms a sealing surface because it is a flat surface and would inherently form a seal of some degree with a flat surface of the bearing body when those surfaces are pressed together. (Ans. 3:22-4:7.)

The Examiner does not point to any support for the above-quoted definition of "seal" and is incorrect on the meaning of "sealing surface." A surface does not become a sealing surface simply because it is flat. The term "seal" means "to close hermetically." *Webster's II New Riverside University Dictionary* 1052 (1984). Thus, a "sealing surface" means a surface that operates to hermetically close something. That meaning is consistent with ATI's specification in which sealing surfaces operate to close off a bearing sleeve to prevent leakage of exhaust gas through the sleeve. (Spec. ¶¶ 23-25.) Simply pressing two flat surfaces together does not mean that the joint structure necessarily acts to hermetically close anything. If neither of the surfaces is associated with a structure that is open and allows fluid passage then nothing is closed when the surfaces are pressed together. That is, nothing is sealed.

ATI's claim 1 requires a bearing sleeve with a primary bearing surface and a valve spindle with a primary sealing surface that cooperates with the primary bearing surface. The claim also requires a washer arranged on the valve spindle that has a secondary sealing surface that cooperates with a secondary bearing surface of the bearing sleeve. The surface of the

valve spindle and the surface of the washer are each a “sealing surface” because they each cooperate with a bearing surface to seal the bearing sleeve.

On the other hand, Thauer discloses that insulating disc 13 on valve shaft 5 is simply interposed between spring 11 and bearing body 3 to shield the spring from heat. (Thauer 2:36-40.) Thauer does not disclose that the connection of insulating disc 13 and bearing body 3 hermetically closes or seals any structure. The only sealing disclosed in Thauer is of bearing body 3 as provided by the connection of the collar 8 of valve shaft 5 and the upper conical surface 9 of the bearing body. (*Id.* at 2:24-28.) The Examiner found that those structures correspond to the primary sealing surface and a primary bearing surface required by claim 1. However, with respect to the required secondary sealing surface, that a surface of insulating disc 13 and a surface of bearing body 3 are pressed together does not mean that either surface is a “sealing surface.”

Furthermore, Thauer describes that there is “substantial clearance” between the valve shaft and the bearing body. (*Id.* at 1:26-29.) Thauer also discloses that it is only the upper seal of bearing body 3 that prevents gases from passing through the “clearance space” between the bearing body and valve shaft 5 and escaping from the bearing body. (*Id.* at 2:43-50.) As shown in Thauer’s figure, the same clearance space appears to be present between insulating disc 13 and the valve shaft 5. Thus, if the upper seal of the bearing body were to fail, gases escaping the bearing body would pass through the clearance space between the insulating disc and valve shaft. The Examiner did not explain how, given that there is a clearance space between the insulating disc and valve shaft, the alleged “sealing surface” of the



insulating disc acts to seal the bearing body. Because Thauer does not disclose that its insulating disc 13 has any sealing function and absent any reasoning by the Examiner as to how a surface of that insulating disc hermetically closes any structure, we do not find that Thauer discloses a washer having a secondary sealing surface that cooperates with a secondary bearing surface as required by claim 1.

For the foregoing reasons, we do not sustain the rejection of claims 1, 3-5, 11, 13, and 16 as anticipated by Thauer.

Claims 6-10, 12, 14, 15, and 17-25 are each dependent, either directly or indirectly, on claim 1. Those dependent claims were rejected as unpatentable based on Thauer alone or on Thauer and one or more of Kipp, Lee, Welty, and Rautenstrauch. The Examiner's analysis of those claims is directed to limitations added by those claims and does not make up for the deficiencies of Thauer as discussed above. We also do not sustain the Examiner's rejections of claims 6-10, 12, 14, 15, and 17-25.

#### F. CONCLUSION

ATI has shown that the Examiner was incorrect in finding that Thauer discloses a washer having a secondary sealing surface that cooperates with a secondary bearing surface of a bearing sleeve.

#### G. ORDER

The rejection of claims 1, 3-5, 11, 13, and 16 under 35 U.S.C. § 102(b) as anticipated by Thauer is reversed.

The rejection of claims 6, 14, and 15 under 35 U.S.C. § 103(a) as unpatentable over Thauer and Kipp is reversed.

Appeal 2009-003657  
Application 10/775,033

The rejection of claims 7-10, 12, 17, and 18 under 35 U.S.C. § 103(a) as unpatentable over Thauer is reversed.

The rejection of claims 19-22 under 35 U.S.C. § 103(a) as unpatentable over Thauer, Lee, and Welty is reversed.

The rejection of claims 23-25 under 35 U.S.C. § 103(a) as unpatentable over Thauer and Rautenstrauch is reversed.

REVERSED

KMF

Pamela A. Kachur  
950 W 450 S, BLDG. 4  
Columbus, IN 47201

<i>Notice of References Cited</i>	Application/Control No. 10/775,033	Applicant(s)/Patent Under Reexamination WATTS ET AL.	
	Examiner	Art Unit BPAI	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
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NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	Seal 2.b., Webster's II New Riverside University Dictionary, 1052 (1984).
	V	
	W	
	X	

\*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)  
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Manufactured in the United States of America

**sea kale** *n.* A European plant, *Crambe maritima*, with edible shoots and cabbage-like leaves.

**sea king** *n.* A Norse pirate chief of the early Middle Ages.

**seal** <sup>1</sup> (sēl) *n.* [ME *seel* < OFr. < Lat. *sigillum*, dim. of *signum*, sign.]

1. **a.** A signet or die with a raised or incised emblem used to stamp an impression on a soft substance, as wax or lead. **b.** The impression made. **c.** The emblem or design itself, belonging solely to the user. **d.** A small disk or wafer of wax, lead, or paper bearing such an imprint and used to close or authenticate a document. 2. Something, as a commercial hallmark, that serves to authenticate or confirm. 3. An adhesive agent, as wax or putty, used to close or secure something or prevent seepage of moisture or air. 4. A device or fluid in a drainpipe that prevents the upward passage of gas. 5. An airtight or watertight closure. 6. A small decorative paper sticker. —**vt.** **sealed, sealing, seals.** 1. To affix a seal to so as to prove authenticity or attest to a standard, as of accuracy, legal weight, or quality. 2. **a.** To close with or as if with a seal. **b.** To close hermetically. **c.** To make fast or fill up, as with plaster or cement. 3. To grant, certify, or designate under seal or authority. 4. To fix irrevocably <My fate was sealed>. 5. Mormon Ch. To make (e.g., a marriage) binding for life. —**seal off.** To close tightly. —**seal-a-ble** *adj.*

**A word history:** The noun *seal*, "a die used to stamp an impression," is related to the word *sign*. *Sign* is from Latin *signum*, which meant both "a mark" and "a signet ring." *Signum* formed a diminutive noun *sigillum*, which literally meant "little mark" but denoted especially the seal or impression left by a signet ring. *Sigillum* became *seel* in Old French, which was borrowed into English as *seal*. **seal** <sup>2</sup> (sēl) *n.* [ME *seel* < OE *seolh*.] 1. Any of various aquatic, carnivorous mammals of the families Phocidae and Otariidae, with a sleek streamlined body and limbs modified into paddlike flippers. 2. The pelt or fur of a seal, esp. a fur seal. 3. Leather made from the hide of a seal. —**vi.** **sealed, sealing, seals.** To hunt seals.

**sea lamprey** *n.* A large marine lamprey, *Petromyzon marinus*, sometimes used as food and parasitic to freshwater fish esp. in the Great Lakes.

**sea-lane** (sē'lān) *n.* An established or frequently used sea route.

**seal-ant** (sē'lant) *n.* A sealing agent.

**sea lavender** *n.* A salt-marsh plant of the genus *Limonium*, with small lavender or pinkish flower clusters.

**sea legs** *pl.n.* Informal. The ability to walk without faltering on board ship; esp. in rough seas.

**sealer** <sup>1</sup> (sē'lar) *n.* 1. One that seals. 2. A substance, as paint or varnish, used to size a surface. 3. An officer who tests and certifies weights and measures.

**sealer** <sup>2</sup> (sē'lar) *n.* A person or vessel engaged in seal hunting.

**seal-ery** (sē'lā-rē) *n., pl. -ies*. 1. The process or occupation of hunting seals. 2. A place where seals are hunted.

**sea lettuce** *n.* A green seaweed of the genus *Ulva*, with thin, irregularly shaped leaflike fronds sometimes used as food.

**sea level** *n.* The level of the ocean's surface, esp. the mean level halfway between high and low tide, used as a standard in measuring land elevation or sea depths.

**sea lily** *n.* Any of various marine crinoids, usu. attached to the ocean floor in deep water, with a long stalk and a flowerlike body.

**sealing wax** *n.* A resinous mixture of shellac and turpentine, soft and fluid when heated and solid when cooled, used to seal letters, batteries, or jars.

**sea lion** *n.* An eared seal of the family Otariidae, esp. *Zalophus californianus* of the Northern Pacific, lacking the valuable underfur of the fur seal.

**seal ring** *n.* A signet ring.

**seal-skin** (sēl'skīn) *n.* 1. The pelt or fur of a fur seal, esp. the underfur. 2. A garment made of sealskin.

**Sealyham terrier** (sē'lē-hām', -lē-əm) *n.* [After *Sealyham*, Wales.] A terrier orig. bred in Wales, with a long head, short legs, and a wiry white coat.



**Sealyham terrier**  
Approximately 10½ inches  
high at shoulder

**seam** (sēm) *n.* [ME *seem* < OE *sēam*.] 1. **a.** A line of junction formed by sewing together two pieces of material along their edges. **b.** A similar line, ridge, or groove formed by fitting or joining together two sections along their edges. **c.** A suture. **d.** A scar. 2. A line across a surface, as a crack or wrinkle. 3. A thin stratum or layer, as

of coal or rock. —**v.** **seamed, seam-ing, seams.** —**vt.** 1. To join or fit together with or as if with a seam. 2. To mark with a seamlike line, as a groove, scar, or wrinkle. 3. To form ridges in by purling. —**vi.** To develop fissures or furrows: CRACK. —**seam'er** *n.*

**sea-maid-en** (sē'mād'n) *also* **sea-maid** (-mād') *n.* A mermaid or sea nymph.

**sea-man** (sē'man) *n.* 1. A mariner or sailor. 2. An enlisted person in the U.S. Navy or Coast Guard ranking above seaman apprentice and below petty officer.

**seaman apprentice** *n.* An enlisted person in the U.S. Navy or Coast Guard ranking above a seaman recruit and below a seaman.

**seaman recruit** *n.* An enlisted person of the lowest rank in the U.S. Navy or Coast Guard.

**sea-man-ship** (sē'man-shīp') *n.* Skill in handling or navigating a boat or ship.

**sea-mark** (sē'mārk') *n.* 1. A landmark visible from the sea, used as a navigational guide. 2. The mark along a shoreline indicating the extent of high tide.

**sea mew** *n.* A coastal gull, esp. *Larus canus* of Europe.

**sea mile** *n.* A nautical mile.

**sea milkwort** *n.* A small fleshy plant, *Glaux maritima* of shores and brackish marshes, with pink or white flowers.

**seam-less** (sēm'lis) *adj.* Lacking seams. —**seam'less-ness** *n.*

**sea-mount** (sē'mount') *n.* A submarine mountain having a summit at least 1,000 feet below sea level.

**sea mouse** *n.* A segmented marine worm of the genus *Aphrodite*, esp. *A. aculeata*, with overlapping scales covered by long hairs.

**seam-ster** (sēm'star) *n.* [ME *semeister* < OE *sēamestre* < *sēam*, seam.] A tailor.

**seam-stress** (sēm'strīs) *n.* A woman who sews, esp. one who makes her living by sewing.

**seamy** (sē'mē) *adj.* -i-er, -i-est. 1. Having or showing a seam or seams. 2. Rough and unattractive: SORDID. —**seam'i-ness** *n.*

**sé-ance** (sā'āns', -āns') *n.* [Fr. < OFr., a sitting < *seoir*, to sit < Lat. *sedēre*.] 1. A meeting at which persons attempt to receive spiritualistic messages. 2. A meeting or session.

**sea oats** *pl.n.* (sing. or *pl.* in number). A tall grass, *Uniola paniculata*, of the southern U.S. coast.

**sea onion** *n.* 1. A bulbous plant, *Urginea maritima* of the Mediterranean area, yielding a powder used medicinally and as a rat poison. 2. A small European plant, *Scilla verna*, with sweet-smelling blue flowers.

**sea otter** *n.* A large nearly extinct marine otter, *Enhydra lutris* of northern Pacific coasts, with a soft dark-brown coat.

**sea pen** *n.* [From its resemblance to a quill pen.] Any of various marine anthozoans of the families Stylaulidae and Funiculinidae, resembling and related to the sea feathers.

**sea-plane** (sē'plān') *n.* An aircraft having floats for taking off from or landing on water.

**sea-port** (sē'pōrt', -pōrt') *n.* A harbor, town, or city with facilities for seagoing ships.

**sea power** *n.* 1. Naval strength. 2. A nation possessing or wielding great naval strength.

**sea purse** *n.* The purse-shaped egg case produced by skates and certain sharks.

**sea-quake** (sē'kwāk') *n.* An earthquake under the ocean floor.

**sear** <sup>1</sup> (sir) *v.* **seared, searing, sears.** [ME *seren* < OE *sēarian* < *sēar*, withered.] —**vt.** 1. To make withered or dried up: SHRIVEL. 2. To scorch, char, or burn the surface of with or as if with something hot. —**vi.** To become withered or dried up. —**n.** A mark or injury caused by searing.

**sear** <sup>2</sup> (sir) *n.* [Prob. < OFr. *serre*, lock < *serrer*, to grasp < L.Lat. *serare*, to bolt < Lat. *sera*, bar, bolt.] The catch in a gunlock that holds the hammer in a halfcocked or fully cocked position.

**sear** <sup>3</sup> (sir) *adj.* var. of *SERE*.

**sea raven** *n.* A large sculpin, *Hemitripterus americanus* of the western North Atlantic.

**search** (sūrch) *v.* **searched, searching, search-es.** [ME *serchen* < OFr. *cerchier* < L.Lat. *circare*, to go around < Lat. *circus*, circle.]

—**vt.** 1. To examine or look over carefully in order to discover something: EXPLORE. 2. To examine or investigate carefully: PROBE <search one's conscience>. 3. To make a complete check of (a legal document): SCRUTINIZE <search a title>. 4. **a.** To examine in order to find something lost or concealed. **b.** To examine (a person or the personal effects of) in order to find something lost or concealed. 5. To come to know: LEARN. —**vi.** To conduct a complete investigation: SEEK <searching for answers to the riddle>. —**n.** 1. An act or instance of searching. 2. The exercise of right of search. —**search-a-ble** *adj.* —**search'er** *n.*

**search-ing** (sūrch'ing) *adj.* 1. Examining carefully or completely <a searching investigation>. 2. Keenly observant <searching in-sights>.

**sear** <sup>4</sup> (sir) *n.* [Prob. < OFr. *serre*, lock < *serrer*, to grasp < L.Lat. *serare*, to bolt < Lat. *sera*, bar, bolt.] The catch in a gunlock that holds the hammer in a halfcocked or fully cocked position.

**sear** <sup>5</sup> (sir) *adj.* var. of *SERE*.

**sea raven** *n.* A large sculpin, *Hemitripterus americanus* of the western North Atlantic.

**search** (sūrch) *v.* **searched, searching, search-es.** [ME *serchen* < OFr. *cerchier* < L.Lat. *circare*, to go around < Lat. *circus*, circle.]

—**vt.** 1. To examine or look over carefully in order to discover something: EXPLORE. 2. To examine or investigate carefully: PROBE <search one's conscience>. 3. To make a complete check of (a legal document): SCRUTINIZE <search a title>. 4. **a.** To examine in order to find something lost or concealed. **b.** To examine (a person or the personal effects of) in order to find something lost or concealed. 5. To come to know: LEARN. —**vi.** To conduct a complete investigation: SEEK <searching for answers to the riddle>. —**n.** 1. An act or instance of searching. 2. The exercise of right of search. —**search-a-ble** *adj.* —**search'er** *n.*

**search-ing** (sūrch'ing) *adj.* 1. Examining carefully or completely <a searching investigation>. 2. Keenly observant <searching in-sights>.

**sear** <sup>6</sup> (sir) *n.* [Prob. < OFr. *serre*, lock < *serrer*, to grasp < L.Lat. *serare*, to bolt < Lat. *sera*, bar, bolt.] The catch in a gunlock that holds the hammer in a halfcocked or fully cocked position.

**sear** <sup>7</sup> (sir) *adj.* var. of *SERE*.

**sea raven** *n.* A large sculpin, *Hemitripterus americanus* of the western North Atlantic.

**search** (sūrch) *v.* **searched, searching, search-es.** [ME *serchen* < OFr. *cerchier* < L.Lat. *circare*, to go around < Lat. *circus*, circle.]

—**vt.** 1. To examine or look over carefully in order to discover something: EXPLORE. 2. To examine or investigate carefully: PROBE <search one's conscience>. 3. To make a complete check of (a legal document): SCRUTINIZE <search a title>. 4. **a.** To examine in order to find something lost or concealed. **b.** To examine (a person or the personal effects of) in order to find something lost or concealed. 5. To come to know: LEARN. —**vi.** To conduct a complete investigation: SEEK <searching for answers to the riddle>. —**n.** 1. An act or instance of searching. 2. The exercise of right of search. —**search-a-ble** *adj.* —**search'er** *n.*

**search-ing** (sūrch'ing) *adj.* 1. Examining carefully or completely <a searching investigation>. 2. Keenly observant <searching in-sights>.

**sear** <sup>8</sup> (sir) *n.* [Prob. < OFr. *serre*, lock < *serrer*, to grasp < L.Lat. *serare*, to bolt < Lat. *sera*, bar, bolt.] The catch in a gunlock that holds the hammer in a halfcocked or fully cocked position.

**sear** <sup>9</sup> (sir) *adj.* var. of *SERE*.

**sea raven** *n.* A large sculpin, *Hemitripterus americanus* of the western North Atlantic.

**search** (sūrch) *v.* **searched, searching, search-es.** [ME *serchen* < OFr. *cerchier* < L.Lat. *circare*, to go around < Lat. *circus*, circle.]